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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/845,336

05/01/2001

Toshiya Uemura

PW 280291

2254

T36-131965M/KOH

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10/05/2006

EXAMINER

SCHILLINGER, LAURA M

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ART UNIT

PAPER NUMBER

2813

DATE MAILED: 10/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/845,336

Applicant(s)

UEMURA ET AL.

Examiner

Laura M. Schillinger

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7, 15-19, 23-31 and 33-37 is/are pending in the application.
- 4a) Of the above claim(s) 33-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 15-19 and 23-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Election/Restrictions***

Newly submitted claims 33-37 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: claims 33-37 constitute independent and distinct species from that of the originally elected claims.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 33-37 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-2, 4-7, 17-18, 23-24, 26-31 are rejected under 35 U.S.C. 102(a) as being anticipated by Ishikawa (JPO 11330565 A).

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In reference to claim 1, Ishikawa teaches a device comprising:

A semiconductor laminate portion formed on a substrate(16) including a light-emitting layer (Fig.2b (34)); and

A reflection surface (44) provided on a substrate (16) disposed so as to be opposite to a side surface of the semiconductor laminate portion (34), and a predetermined distance is provided between the semiconductor laminate portion and the reflection surface (Fig.6).

In reference to claim 2, Ishikawa teaches wherein the reflection surface (44) reflects light from the side surface of the semiconductor laminate portion (34) into a direction of an optical axis of the light-emitting device (Fig.6).

In reference to claim 4, Ishikawa teaches wherein the reflection surface is made of a material which is the same as that of an n pad electrode (0037 and 0041).

In reference to claim 5, Ishikawa teaches wherein a portion of the n pad electrode opposite to the side surface of the semiconductor laminate portion forms a second reflection surface (0037).

In reference to claim 6, Ishikawa teaches wherein the reflection surface is formed on an n-type semiconductor layer which is formed by etching a first depth, and the n pad electrode is formed on the n-type semiconductor layer which is formed by etching to be a second depth shallower than the first depth (Fig.4b).

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In reference to claim 7, Ishikawa teaches wherein the reflection surface is formed integrally with the n pad electrode (0037).

17. A group III nitride compound semiconductor light-emitting device according to claim 1, wherein said reflection surface is formed on a layer in said semiconductor laminate portion (0037).

18. (Previously presented) A group III nitride compound semiconductor light-emitting device according to claim 1, wherein an upper surface of said reflection surface (44) is elevated higher than said light-emitting layer (34) (Fig.6).

23. A group III nitride compound semiconductor light-emitting device according to claim 1, wherein said reflection surface reflects light emitted from said side surface of said semiconductor laminate portion (Fig.6)

24. A group III nitride compound semiconductor light-emitting device according to claim 1, wherein said reflection surface comprises a shape for reflecting light in a direction of an optical axis for said light emitting device (Fig.6).

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26. A group III nitride compound semiconductor light-emitting device according to claim 1, wherein said direction of an optical axis comprises a direction of a center axis of said device (Fig.6).

27. (Previously presented) A group III nitride compound semiconductor light-emitting device according to claim 1, further comprising: an n-pad electrode formed on said semiconductor laminate portions said reflection surface comprising a side surface of said n-pad electrode having a shape for reflecting light in a direction of an optical axis for said light-emitting device (Fig.6 and 0037).

28. (Previously presented) A group III nitride compound semiconductor light-emitting device according to claim 1, wherein said reflection surface is formed around a circumference of said light-emitting device (Fig.6).

29. A group III nitride compound semiconductor light-emitting device according to claim 1, wherein at least a portion of the reflection surface (44) is formed near a plane of said light-emitting layer (34) (Fig.6).

30. . A group III nitride compound semiconductor light-emitting device according to claim 1, wherein said reflection surface (44) is disposed so as to be transversely opposite to a side surface of said light-emitting layer (34) (Fig.6).

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31. A group III nitride compound semiconductor light-emitting device according to claim 1, wherein said reflection surface comprises a thickness of at least 0.7  $\mu\text{m}$  (Col.5, lines: 1-10-sum of thickness of laminate layers).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 15-16, 19 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishikawa (JP 411330565A) in further view of Komoto ('940).

Ishikawa teaches the limitations of claim 1, however fails to teach the limitations of claims 3, 15-16, and 25 as pertaining to the distance between the reflective layer and the light emitting layer. However Komoto teaches a similar structure including a groove etched in the layers to provide a separated reflective surface for a side light emitting layer and teaches:

In reference to claim 3, Komoto teaches wherein a distance between the reflection surface and the side surface of the semiconductor laminate portion is in a range of from 0.1 to 10  $\mu\text{m}$  (col.5, lines: 60-68).

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In reference to claim 15, Komoto teaches wherein a distance between the reflection surface and the side surface of the semiconductor laminate portion is in a range of from 0.2 to 7um (Col.5, lines: 60-68).

In reference to claim 16, Komoto teaches wherein a distance between the reflection surface and the side surface of the semiconductor laminate portion is in a range of from 0.3 to 5um (Col.5, lines:60-68).

25. Komoto teaches group III nitride compound semiconductor light-emitting device according to claim 1, wherein said predetermined distance comprises a distance between said reflection surface and said side surface of said semiconductor laminate portion which is no greater than 10 um (Col.5, lines: 60-68).

It would have been obvious to one of ordinary skill in the art to modify Ishikawa's teachings to further include the distance ranges taught by Komoto because such distances are suitable for LEDs and moreover, these claims are prima facie obvious without showing that the claimed ranges achieve unexpected results relative to the prior art range. In re Woodruff, 16 USPQ2d 1935, 1937 (Fed. Cir. 1990). See also In re Huang, 40 USPQ2d 1685, 1688(Fed. Cir. 1996)(claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art). See also In re Boesch, 205 USPQ 215 (CCPA) (discovery of optimum value of result effective variable in known process is ordinarily



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within skill of art) and In re Aller, 105 USPQ 233 (CCPA 1955) (selection of optimum ranges within prior art general conditions is obvious).

Lastly, Ishikawa teaches the limitations of claim 1, however fails to teach the limitation of claim 19, wherein the group III nitride compound semiconductor light-emitting device according to claim 1, wherein said reflection surface comprises a curved reflection. However, Komoto teaches the groove may have a curved surface (Fig.3C). Therefore it would have been obvious to one of ordinary skill in the art to make the grooves taught by Ishikawa, curved as taught by Komoto since Komoto teaches the shape may either be square or circular (Col.6, lines: 15-20).

### ***Response to Arguments***

Applicant's arguments filed 5/31/06 have been fully considered but they are not persuasive. Applicant argues that the Ishikawa reference fails to teach forming the laminate and reflection surface formed on a substrate- however both are formed on base 16- which is a substrate- therefore the arguments are not persuasive.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura M. Schillinger whose telephone number is (571) 272-1697. The examiner can normally be reached on M-T, R-F 7:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

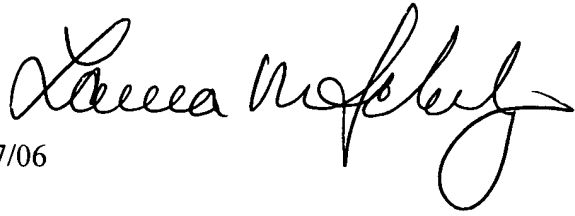
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Laura M Schillinger

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A handwritten signature in black ink, appearing to read "Theresa M. Kelly". The signature is fluid and cursive, with the first name "Theresa" written in a series of connected loops, followed by "M." and "Kelly".

9/17/06

Primary Examiner  
Art Unit 2813